

New Li Battery Chemistry for Improved Performance, Phase I

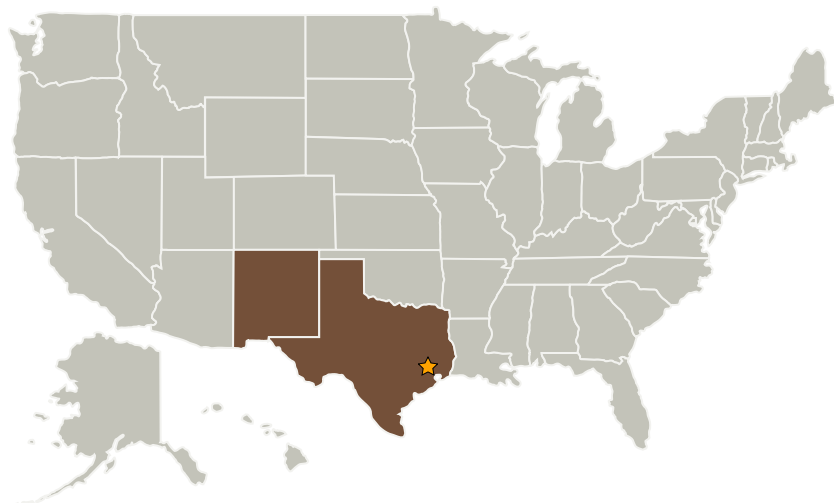
Completed Technology Project (2009 - 2009)



Project Introduction

Current state-of-the-art Lithium (Li) or Li-ion systems are unable to meet the performance goals of space-rated rechargeable batteries for many NASA's future robotic and human exploration missions. They either cannot provide sufficient energy and power or have poor cycle or calendar life. TH Chem, Inc. (THC) proposes to develop a new electrochemical system that is fundamentally different from the state-of-the-art, for advanced Li battery applications. Li batteries developed from the new system will show significantly improved battery performance characteristics including energy/power density, cycle/calendar life, cost, and abuse tolerance. The new system is based on development of novel polymeric cathode materials (PCMs) having high-energy functional groups chemically grafted to a robust polymer backbone. In Phase I, THC will prepare the proposed PCMs by functionalization of an inexpensive polymeric starting material. Li cells will be assembled using the PCMs and electrochemically evaluated. The concept of the new electrochemical system will be demonstrated. THC has extensive experience in Li battery chemistries and technologies.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
TH Chem, Inc.	Supporting Organization	Industry Minority-Owned Business, Women-Owned Small Business (WOSB)	Albuquerque, New Mexico

Primary U.S. Work Locations

New Mexico	Texas
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.2 Energy Storage
 - └ TX03.2.1 Electrochemical: Batteries